

**Preliminary Amendment**

Applicant: Nicola Da Dalt

Serial No.: Unknown

(Priority Application No. DE 103 03 405.6)

(International Application No. PCT/EP2004/00677)

Filed: Herewith

(Priority Date January 29, 2003)

(International Filing Date January 27, 2004)

Docket No. I435.128.101/12928US

Title: DEVICE AND METHOD FOR FREQUENCY SYNTHESIS

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**IN THE CLAIMS**

Please cancel claims 1-16 without prejudice.

Please add new claims 17-39 as follows:

Claims 1-16 (Cancelled).

17. A device for frequency synthesis comprising:

an oscillator driven for generating, at a frequency out of a set of at least two possible output frequencies, an output signal; and

a control device for driving the oscillator, wherein the control device, for the purpose of generating a desired frequency that is not included in the set of possible output frequencies, is configured to drive the oscillator to alternately generate at least two different output frequencies, out of the set of possible output frequencies, such that an average value of the generated output frequencies over a certain time period is substantially the desired frequency.

18. The device of claim 17, wherein the control device is configured to drive the oscillator with a bit stream generated according to a delta-sigma-principle.

19. The device of claim 17, wherein the control device is configured to drive the oscillator such that the at least two generated output frequencies are alternated at an average frequency that is greater than the reciprocal value of the certain time period.

20. The device of claim 17, wherein the control device is configured to drive the oscillator such that the at least two generated output frequencies are alternated at an average frequency that is greater than the at least two possible output frequencies.

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21. The device of claim 17, wherein the control device is configured to drive the oscillator such that the at least two generated output frequencies are alternated at an average frequency that is less than the at least two possible output frequencies.
22. The device of claim 17, wherein the oscillator comprises a digitally controlled oscillator.
23. The device of claim 17, wherein the oscillator comprises a ring oscillator, wherein a current, out of a set of possible currents, can be supplied to the ring oscillator for the purpose of driving the ring oscillator.
24. The device of claim 17, wherein the device comprises a frequency divider connected to the output of the oscillator.
25. The device of claim 17, wherein the device is of digital design.
26. A device for frequency synthesis comprising:
  - an oscillator driven for generating, at a frequency out of a set of at least two possible output frequencies, an output signal; and
  - a control device for driving the oscillator, wherein the control device, for the purpose of generating a desired frequency that is not included in the set of possible output frequencies, is configured to drive the oscillator to alternately generate at least two different output frequencies, out of the set of possible output frequencies, such that an average value of the generated output frequencies over a certain time period is substantially the desired frequency, wherein the oscillator comprises an LC element through which the output frequency can be determined.
27. The device of claim 26, wherein a total capacitance of the LC element includes at

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least one capacitor that can be switched for the purpose of driving the oscillator.

28. The device of claim 26, wherein the capacitance of the LC element includes at least one varactor diode that can be driven for the purpose of driving the oscillator.

29. A method for frequency synthesis comprising:

providing an oscillator driven to generate an output signal having an output frequency out of a set of possible output frequencies; and

driving the oscillator for the purpose of generating a desired frequency that is not included in the set of possible output frequencies, in such a way that the oscillator alternately generates at least two different output frequencies, out of the set of possible output frequencies, such that the average value of the at least two generated output frequencies over a certain time period corresponds to the desired frequency.

30. The method of claim 29, wherein driving the oscillator comprises driving the oscillator with a bit stream generated according to a delta-sigma-principle.

31. The method of claim 29, comprising alternating the at least two generated output frequencies at an average frequency that is greater than the reciprocal value of the certain time period.

32. The method of claim 29, comprising alternating the at least two generated output frequencies at an average frequency that is greater than the at least two different output frequencies.

33. The method of claim 29, comprising alternating the at least two generated output frequencies at an average frequency that is less than the at least two different output frequencies.

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34. A device for frequency synthesis comprising:
- a digitally controlled oscillator driven for generating, at a frequency out of a set of at least two possible output frequencies, an output signal; and
- a control device for driving the oscillator, wherein
- the control device, for the purpose of generating a desired frequency that is not included in the set of possible output frequencies, is configured to drive the oscillator to alternately generate at least two different output frequencies, out of the set of possible output frequencies, such that an average value of the generated output frequencies over a certain time period is substantially the desired frequency;
35. The device of claim 34, wherein the control device is configured to drive the oscillator such that the at least two generated output frequencies are alternated at an average frequency that is greater than the at least two possible output frequencies.
36. The device of claim 34, wherein the device comprises a frequency divider connected to the output of the oscillator.
37. A device for frequency synthesis comprising:
- oscillator means driven for generating, at a frequency out of a set of at least two possible output frequencies, an output signal; and
- a control device for driving the oscillator, wherein
- the control device, for the purpose of generating a desired frequency that is not included in the set of possible output frequencies, is configured to drive the oscillator to alternately generate at least two different output frequencies, out of the set of possible output frequencies, such that an average value of the generated output frequencies over a certain time period is substantially the desired frequency.

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38. The device of claim 37, wherein the control device is configured to drive the oscillator such that the at least two generated output frequencies are alternated at an average frequency that is greater than the reciprocal value of the certain time period.

39. The device of claim 37, wherein the control device is configured to drive the oscillator such that the at least two generated output frequencies are alternated at an average frequency that is greater than the at least two possible output frequencies.